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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,891	09/04/2007	Young Soo Kim	K-0821	3460
34610	7590	02/15/2011		
KED & ASSOCIATES, LLP			EXAMINER	
P.O. Box 8638			PEYTON, DESMOND C	
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			ART UNIT	PAPER NUMBER
			3749	
			MAIL DATE	DELIVERY MODE
			02/15/2011 PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/584,891

Applicant(s)

KIM ET AL.

Examiner

DESMOND PEYTON

Art Unit

3749

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The Amendment filed 15 December 2010 has been entered. Claims 1-5 and 7-28 are pending in this application. Claims 1-5, 7-18, 21, 22 and 24-28 are amended. Claims 19, 20 and 23 are original claims. Claim 6 is cancelled by applicant.

Claim Objections

In Re Claim 28, applicant's response to the objection of claim 28 has been acknowledged. The objection to claim 28 is withdrawn.

Claims 1, 2, 5, 18, 21 and 22 are objected to because of the following informalities:

In Re Claim 2, in line 3 the terms "tube in" should be replaced with "tube is".

In Re Claim 5, the limitation "unit" in line 3 of the claim lacks antecedent basis in the claim.

In Re Claim 22, in line 5 the terms "positioned the" should be replaced with "positioned on the".

Appropriate corrections are required for claims 2, 5, and 22.

In Re Claims 1, 18, 21 and 22, it's not clear whether burner chambers are intended to be positively recited. Since the preamble is directed to the subcombination of "a device that supplies mixed gas" and not the overall combination of the supply device that supplies mixed gas and the burner assembly, the recitations of the burner chambers is interpreted as intended use only of the device that supplies mixed gas. Therefore, all that is needed from a prior art is a device that is capable of supplying mixed gas to a burner chamber.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

Claims 22 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Shukla et al. (US Patent No. 4,569,328) hereinafter *Shukla* '328.

In Re Claim 22, *Shukla* '328 discloses a device (Fig. 2) that supplies mixed gas to gas burners (#80, col. 3, line 39, ref. col. 2, line 29) having a housing (#70, Figs. 2 and 3), a plurality of burner assemblies (#72, Figs. 2 and 3, col. 3, line 33) provided in the housing, and each having a burner chamber (the interior of #80) that receives a mixture of fuel gas and air therein, and a glass plate (#76, Figs. 2 and 3, ref. col. 3, line 20) positioned on the housing, comprising:

a mixing tube assembly (#82, Fig. 3), including:

a mixing tube having one end in communication with the burner chamber so as to supply fuel gas and air to the burner chamber (shown in Figs. 1 and 3);

an air supply tube (#94, Fig. 3) positioned at an outside of the mixing tube such that an end thereof is spaced a predetermined distance apart from a corresponding end of the mixing tube in a radial direction (implicit from Fig. 1);

an air passage (an internal portion of #84, Fig. 3) formed between the corresponding ends of the air supply tube and the mixing tube, wherein a pressure difference between the outside and an interior of the mixing tube through the air passage; and

a connecting member (#84, Fig. 3) that connects the mixing tube and the air supply tube so as to form a single unit;

a gas nozzle (in association with a gas valve shaft #104 and a gas supply line #108) **spaced a predetermined distance apart from the mixing tube so as to spray gas toward the mixing tube; and**

a fan unit (#86, Fig. 2) that blows air into the air supply tube.

In Re Claim 23, *Shukla* '328 further discloses **the device** as applied in **Claim 22** above, **wherein the connecting member includes a nozzle holding part for holding the gas nozzle** (located at the junction of #108 assembly and #84 assembly, Fig. 3).

Claim Rejections - 35 USC § 103

Claims 1-5, 7-11, 13-15, 17-21, 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla* '328 in view of L.D. Houlis (US Patent No. 2,494,243) hereinafter *Houlis* '243.

In Re Claim 1, *Shukla* '328 discloses **a device** (Fig. 2) **that supplies mixed gas to radiant heating type gas burners** (#80, col. 3, line 39, ref. col. 2, line 29) **having a housing** (#70, Figs. 2 and 3), **a plurality of burner assemblies** (#72, Figs. 2 and 3, col. 3, line 33) **in the housing for combustion of the mixed gas therein, each of the plurality of burner assemblies having a burner chamber** (below #80) **that receives a mixture of fuel gas and air therein, and a glass plate** (#76, Figs. 2 and 3, ref. col. 3, line 20) **placed on top of the housing, comprising:**

a plurality of mixing tubes (#82, Fig. 3) **respectively in communication with the plurality of burner chambers for supplying the fuel gas and air thereto;**

a plurality of gas nozzles (in association with a gas valve #104 and a gas supply line #108) **for respectively spraying the fuel gas into the mixing tubes;**

a plurality of air supply tubes (#94, Figs. 2 and 3) for respectively directing air toward the plurality of the mixing tubes, wherein a first end of each of the plurality of mixing tubes is coupled to a corresponding burner chamber and a first end of each of the plurality of air supply tubes is aligned with a second end of a corresponding mixing tube, with a predetermined gap (the distance from #94 and a corresponding second end of the mixing tube, shown in Fig 3) formed there between;

a plurality of air passages (#84, Figs 2 and 3) defined by the predetermined gaps formed between the air supply tubes and the mixing tubes, wherein outside air is drawn through the plurality of air passages and into the plurality of mixing tubes by a pressure difference between the outside and inside of the mixing tubes; and

at least one fan (#86, Fig. 2) in communication with a second end of at least one of the plurality of air supply tubes for supplying air thereto.

Shukla '328 does not explicitly teach wherein a first end of each of the plurality of air supply tubes is **axially** aligned with the second end of a corresponding mixing tube.

Houlis '243 teaches **a first end (#54, Fig. 7) of each of the plurality of air supply tubes is axially aligned with a second end (closest to #7, Fig. 6) of a corresponding mixing tube (#4, Fig. 6), with a predetermined gap (between #10 and #7, Fig. 6).**

It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify *Shukla* '328 air supply tubes so that **a first end of each**

of the plurality of air supply tubes is axially aligned with a second end of a corresponding mixing tube, with a predetermined gap (of *Houlis* '243) for the purpose of enhancing the effect of the inherent pressure characteristics associated with moving fluid through the mixing tube.

In Re Claim 2, Shukla '328 in view of *Houlis* '243 further discloses **the device** as applied in **Claim 1** above, **wherein the predetermined gap formed between; the first end of each air supply tube and the second end of the respective mixing tube in formed in a radial direction** (as shown in Fig. 3).

In Re Claim 3, Shukla '328 in view of *Houlis* '243 further discloses **the device** as applied in **Claim 1** above, **wherein the predetermined gap formed between the first end of each air supply tube and the second end of the respective mixing tube is formed in a longitudinal direction**.

In Re Claim 4, Shukla '328 in view of *Houlis* '243 further discloses **the device** as applied in **Claim 1**, **wherein the at least one fan is provided at an outside of the housing** (as shown in Fig. 11, *Houlis* '243).

In Re Claim 5, Shukla '328 in view of *Houlis* '243 discloses **the device** as applied in **Claim 1** above, **further comprising at least one air supply chamber** (#90, Fig. 2) **formed between the plurality of air supply tubes and the at least one fan so as to provide air from the at least one fan unit to the plurality of air supply tubes**.

In Re Claim 7, Shukla '328 in view of *Houlis* '243 discloses **the device** as applied in **Claim 1** above, **further comprising at least one branch tube** (#90, Fig. 2) **having a first end connected to the at least one fan, and a second end in**

communication with the plurality of the air supply tubes so as to distribute air from the at least one fan to the plurality of air supply tubes.

In Re Claim 8, Shukla '328 in view of Houlis '243 discloses the device as applied in Claim 1 above, further comprising a plurality of connecting members (#7, Fig. 6, Houlis '243) that each connect a mixing tube of the plurality of mixing tubes to a corresponding air supply tube.

In Re Claim 9, Shukla '328 in view of Houlis '243 further discloses the device as applied in Claim 8 above, wherein each of the plurality of connecting members includes a nozzle holding member (#16, Fig. 1, Houlis '243) that holds a corresponding gas nozzle (#20 shown in Fig. 1, Houlis '243) of the plurality of gas nozzles.

In Re Claim 10, Shukla '328 in view of Houlis '243 further discloses the device as applied in Claim 8 above, further comprising a fastening device (#11 and #12, Fig. 1, Houlis '243), that fastens each connecting member to a respective mixing tube and air supply tube.

In Re Claim 13, Shukla '328 in view of Houlis '243 discloses the device as applied in Claim 8 above. Shukla '328 in view of Houlis '243 does not explicitly teach wherein each mixing tube, corresponding air supply tube, and corresponding connecting member are injection molded as a single unit. It would have been an obvious matter of design choice to construct Shukla '328 in view of Houlis '243's mixing tube, air supply tube and connecting member as separate parts assembled together, since applicant has not disclosed that having the mixing tube, the air supply tube, and

the connecting member as one injected molded unit solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the mixing tube, the air supply tube, and the connecting member as separate parts assembled together.

In Re Claim 14, Shukla '328 in view of Houlis '243 discloses **the device** as applied in **Claim 1** above, **wherein a sectional area of the first end of each air supply tube, facing the second end of the respective mixing tube, is greater than or equal to a sectional area of the second end of the respective mixing tube** (see Fig. 7 of Houlis '243).

In Re Claim 15, Shukla '328 in view of Houlis '243 further discloses **the device** as applied in **Claim 1** above, **wherein a diameter of the first end** (via elements #54 and #10, Fig. 7, Houlis '243) **of each air supply tube facing the second end of the respective mixing tube** (#4, Fig. 7, Houlis '243) **is greater than a diameter of other portions of the air supply tube so as to have an expanded tube form.**

In Re Claim 17, Shukla '328 in view of Houlis '243 further discloses **the device** as applied in **Claim 1** above, **wherein each of the plurality of mixing tubes is connected to a plurality of air supply tubes for supplying air thereto** (as taught by Houlis '243, Fig. 7).

In Re Claim 18, Shukla '328 discloses **a device** (Fig. 2) **that supplies mixed gas to radiant heating type gas burners** (#80) **having a housing** (#70), **a plurality of burner assemblies** (#72) **provided in the housing for combustion of the mixed gas therein, each of the plurality of burner assemblies having a burner chamber**

(below #80) **that receives a mixture of fuel gas and air thereto, and a glass plate (#76) positioned on the housing, comprising:**

a plurality of mixing tubes (#82) respectively in communication with the plurality of burner chambers;

a plurality of gas nozzles respectively in communication with the plurality of mixing tubes;

a plurality of air supply tubes each spaced a predetermined distance apart from and aligned with a corresponding end a respective mixing tube of the plurality of mixing tubes;

a plurality of air passages defined by predetermined gaps formed between the air supply tubes and the mixing tubes, wherein outside air is drawn through the plurality of air passages and into the plurality of mixing tubes by a pressure difference between the outside and inside of the mixing tubes;

at least one fan that supplies air to the plurality of air supply tubes; and

at least one air supply chamber (#90, Fig. 2) provided between the plurality of air supply tubes and the at least one fan so as to direct air from the fan to the plurality of air supply tubes (see claim 1 above, for limitation element correlation to prior art of *Shukla* '328, except where noted).

Shukla '328 does not explicitly teach wherein a first end of each of the plurality of air supply tubes is **axially** aligned with the second end of a corresponding mixing tube.

Houlis '243 teaches **a first end (#54, Fig. 7) of each of the plurality of air supply tubes is axially aligned with a second end** (closest to #7, Fig. 6) **of a**

corresponding mixing tube (#4, Fig. 6), with a predetermined gap (between #10 and #7, Fig. 6).

It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify *Shukla* '328 air supply tubes so that **a first end of each of the plurality of air supply tubes is axially aligned with a second end of a corresponding mixing tube, with the predetermined gap (of *Houlis* '243)** for the purpose of enhancing the effect of the inherent pressure characteristics associated with moving fluid through the mixing tube.

In Re Claim 19, *Shukla* '328 in view of *Houlis* '243 discloses the device as applied in Claim 18 above, wherein the air supply chamber is integrated inside of the housing (Fig. 2, *Shukla* '328).

In Re Claim 20, *Shukla* '328 in view of *Houlis* '243 discloses the device as applied in Claim 18 above, wherein the air supply chamber has a plurality of air supply tubes of other burner assemblies connected thereto (Fig. 2, *Shukla* '328).

In Re Claim 21, *Shukla* '328 discloses a device that supplies mixed gas to radiant heating type gas burners of having a housing, a plurality of burner assemblies provided in the housing for, each of the plurality of burner assemblies having with a burner chamber that receives a mixture of fuel gas and air therein, and a glass plate position on the housing, comprising:

a plurality of mixing tubes respectively in communication with the plurality of burner chambers;

plurality of gas nozzles respectively in communication with the plurality of mixing tubes so as to spray fuel gas therein;

a plurality of air supply tubes each spaced a predetermined distance apart from and aligned with a corresponding end of a respective mixing tube of the plurality of mixing tubes;

a fan unit in communication with the plurality of air supply tubes; and

at least one branch tube having a first end connected to the fan unit, and a second end connected to the plurality air supply tubes so as to distribute air from the fan unit to the plurality of air supply tubes (see claim 1 above, for limitation element correlation to prior art of *Shukla* '328).

Shukla '328 does not explicitly teach wherein a first end of each of the plurality of air supply tubes is **axially** aligned with the second end of a corresponding mixing tube.

Houlis '243 teaches a **first end** (#54, Fig. 7) of each of the plurality of air supply tubes is axially aligned with a **second end** (closest to #7, Fig. 6) of a

corresponding mixing tube (#4, Fig. 6), with a predetermined gap (between #10 and #7, Fig. 6).

It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify *Shukla* '328 air supply tubes so that **a first end of each of the plurality of air supply tubes is axially aligned with a second end of a corresponding mixing tube, with a predetermined gap** (of *Houlis* '243) for the purpose of enhancing the effect of the inherent pressure characteristics associated with moving fluid through the mixing tube.

In Re Claim 24, *Shukla* '328 further discloses **the device** as applied in **Claim 22** above, except explicitly **wherein the connecting member is fixed to opposite side parts of the mixing tube and the air supply tube with fastening means.**

Houlis '243 discloses a device (comprising #4, #7 and #50) explicitly wherein a connecting member (#7, Figs. 1 and 2) is fixed to opposite side parts of a mixing tube (#4, Figs. 1 and 2) and an air supply tube (#53, Fig. 6) with fastening means (threaded couplings of #7 with #4 and #53).

It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify *Shukla* '328 device that supplies mixed gas **wherein the connecting member is fixed to opposite side parts of the mixing tube and the air supply tube with fastening means** as taught by *Houlis* '243 for the purpose of enhancing the effect of the inherent pressure characteristics associated with moving fluid through the mixing tube wherein the alignment of gas and air are axially arranged more so than not.

In Re Claim 28, *Shukla* '328 in view of *Houlis* '243 further discloses **the device** as applied in **Claim 1** above, **wherein a diameter of the one end of the air supply tube facing the corresponding end of the mixing tube is greater than a diameter of other portions thereof such that the air supply tube has an expanded tube form.**

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla* '328 in view of *Riehl* (US Patent No. 5,193,273) hereinafter *Riehl* '273.

In Re Claim 25, *Shukla* '328 further discloses **the device** as applied in **Claim 22** above, except explicitly wherein the mixing tube assembly comprises;

a first mixing tube assembly having a first mixing tube part forming a first half of the mixing tube, a first air supply tube part forming a first half of the air supply tube, and a plate shaped first connection member that extends outward from two opposite sides of the first mixing tube part and the first air supply part as a single unit so as to connect the first mixing tube part and the first air supply part as a single unit; and

a second mixing tube assembly having a second mixing tube part forming a second half of the mixing tube, a second air supply tube part forming a second half of the air supply tube, and a plate shaped second connection member that extends outward from two opposite sides of the second mixing tube part and the second air supply part as a single unit so as to connect the second mixing tube part and the second air supply part as a single unit, wherein the second connection member is

bonded with the first connection member (see claim 1 above, for limitation element correlation to prior art of *Shukla* '328).

Riehl '273 discloses a method of making a set burner construction wherein the mixing tube (the Venturi section #11), the air supply tube (#25 at #27, Fig. 1, col. 3, line 34), and the connecting member (plate means #21 and #22, Fig. 6) form a mixing tube assembly having two symmetric members forming a single unit (shown in Fig. 1), wherein the mixing tube assembly comprises;

a first mixing tube assembly (the upper half of the mixing tube assembly represented in Fig. 6) having a first mixing tube part forming a first half of the mixing tube, a first air supply tube part forming a first half of the air supply tube, and a plate shaped first connection member that extends outward from two opposite sides of the first mixing tube part and the first air supply part as a single unit so as to connect the first mixing tube part and the first air supply part as a single unit; and

a second mixing tube assembly (the lower half of the assembly represented in Fig. 6) having a second mixing tube part forming a second half of the mixing tube, a second air supply tube part forming a second half of the air supply tube, and a plate shaped second connection member that extends outward from two opposite sides of the second mixing tube part and the second air supply part as a single unit so as to connect the second mixing tube part and the second air supply part as a single unit, wherein the second connection member is bonded with the first connection member.

It would have been obvious to one of ordinary skill in the art at the time that the invention was made to construct *Shukla* '328's mixing tube assembly **wherein the mixing tube assembly comprises;**

a first mixing tube assembly having a first mixing tube part forming a first half of the mixing tube, a first air supply tube part forming a first half of the air supply tube, and a plate shaped first connection member that extends outward from two opposite sides of the first mixing tube part and the first air supply part as a single unit so as to connect the first mixing tube part and the first air supply part as a single unit; and

a second mixing tube assembly having a second mixing tube part forming a second half of the mixing tube, a second air supply tube part forming a second half of the air supply tube, and a plate shaped second connection member that extends outward from two opposite sides of the second mixing tube part and the second air supply part as a single unit so as to connect the second mixing tube part and the second air supply part as a single unit, wherein the second connection member is bonded with the first connection member as taught by *Riehl* '273 for the purpose of simplifying the assembly and replacement.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla* '328 in view of *Houlis* '243 and in further view of *Riehl* (US Patent No. 5,193,273) hereinafter *Riehl* '273.

In Re Claim 11, *Shukla* '328 in view of *Houlis* '243 discloses **the device** as applied in **Claim 8** above, except explicitly wherein the mixing tube, the air supply tube, and the connecting member form a mixing tube assembly having two symmetric members bonded together. *Riehl* '273 discloses a method of making a set burner construction wherein the mixing tube (the Venturi section #11), the air supply tube (#25 at #27, col. 3, line 34), and the connecting member (#21 and #22, Fig. 6) form a mixing tube assembly having two symmetric members bonded together (see Fig. 6). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to construct *Shukla* '328 in view of *Houlis* '243's mixing tube assembly **wherein each mixing tube, corresponding air supply tube, and corresponding connecting member form a mixing tube assembly having two symmetric members bonded together** as taught by *Riehl* '273 to simplify assembly and replacement.

In Re Claim 12, *Shukla* '328 in view of *Houlis* '243 and *Riehl* '273 further discloses **the device** as applied in **Claim 11** above, **wherein the mixing tube assembly comprises;**

a first mixing tube assembly having a first mixing tube part forming a first half of the mixing tube, a first air supply tube part forming a first half of the air supply tube, and a plate shaped first connection member that extends outward from two opposite sides of the first mixing tube part and the first air supply part as a single unit so as to connect the first mixing tube part and the first air supply part as a single unit; and

a second mixing tube assembly having a second mixing tube part forming a second half of the mixing tube, a second air supply tube part forming a second half of the air supply tube, and a plate shaped second connection member that extends outward from two opposite sides of the second mixing tube part and the second air supply part as a single unit to connect the second mixing tube part and the second air supply part as a single unit, wherein the second connection member is bonded with the first connection member (reference *Riehl* '273).

Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla* '328.

In Re Claim 26, *Shukla* '328 discloses the device as applied in **Claim 22** above. *Shukla* '328 does not explicitly teach **wherein the mixing tube assembly is formed as a single unit by injection molding**. It would have been an obvious matter of design choice to construct *Shukla* '328's mixing tube assembly formed from separate parts assembled together, since applicant has not disclosed that having **the mixing tube assembly formed as a single unit by injection molding** solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the mixing tube assembly formed from separate parts assembled together.

In Re Claim 27, *Shukla* '328 discloses the device as applied in **Claim 22** above. *Shukla* '328 does not explicitly teach wherein the one end of the air supply tube facing the other end of the mixing tube has a sectional area equal to, or greater than a sectional area of the other end of the mixing tube. It would have been obvious to one

having ordinary skill in the art at the time the invention was made to construct *Shukla* '328's the device as applied in claim 22 above, **wherein a sectional area of the one end of the air supply tube facing the corresponding end mixing tube is greater than or equal to, or greater than a sectional area of the corresponding end of the mixing tube**, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla* '328 in view of Herbert (US Patent No. 5,425,353) hereinafter *Herbert* '353.

In Re Claim 16, *Shukla* '328 in view of *Houlis* '243 discloses the device as applied in **Claim 1** above, **wherein the at least one fan includes; a motor**. *Shukla* '328 in view of *Houlis* '243 does not explicitly disclose a variable speed motor that varies a rotation speed of the at least one fan based on a gas spray rate through one or more of the plurality of gas nozzles. *Herbert* '353 discloses a cooking hob wherein the fan (#20) includes a variable speed motor that varies a rotation speed of the at least one fan based on a gas spray rate through one or more of the plurality of gas nozzles (col. 2, line 65-67, *Herbert* '353).

It would have been obvious to one of ordinary skill in the art at the time that the invention was made to use a fan as described by *Herbert* '353 above in place of *Shukla* '328's to include **a variable speed motor that varies a rotation speed of the at least**

one fan based on a gas spray rate through one or more of the plurality of gas nozzles in order to maintain the desired gas/air ratio during a cooking cycle.

Joint Inventorship

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

Applicant's arguments with respect to claims 1-5 and 7-28 have been considered but are moot in view of the new ground(s) of rejection as necessitated by applicant's amendment dated 15 December 2010.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached USPTO form 892 for list of prior art made of record.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DESMOND PEYTON whose telephone number is (571)270-1393. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/D. P./ 2/11/2011
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